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COOK, ALEX, McFARRON, MANZO,
CUMMINGS & MEHLER, LTD.
SUITE 2850
200 WEST ADAMS STREET
CHICAGO, IL 60606

| EXAMINER | |
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| PADGETT, MARIANNE L | |
| ART UNIT | PAPER NUMBER |
| 1715 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/827,457 | MAEKAWA ET AL. | |
| | **Examiner** | **Art Unit** | |
| | MARIANNE L. PADGETT | 1715 | |

***-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --***

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *18 March 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-6,16,17 and 23-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,16,17 and 23-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

1. Applicants' amendment of 3/18/2010 has appropriately corrected 112, second & first problems as discussed in sections 2 & 4 of the action mailed 12/18/2009, as well as correcting the issue in the disclosure as discussed in section 3 thereof.

2. The following is a quotation of **35 U.S.C. 103(a)** which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The **nonstatutory double patenting rejection** is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. **Claims 1-6, 16-17 & 29-30** are rejected under 35 U.S.C. **103(a)** as being unpatentable over **Kiguchi et al.** (6,599,582 B2), in view of **Di Dio** (2004/0152329 A1) & **Speakman et al**. (6,849,308 B1), <u>optionally</u> this thing further considering **Lewis et al**. (5,272,979).

**Claims 1, 3-4, 6 & 29** are rejected under 35 U.S.C. **103(a)** as being unpatentable over **Kiguchi et al.** (6,599,582 B2) & **Speakman et al**. (6,849,308 B1), <u>optionally</u> this thing further considering **Lewis et al**. (5,272,979).

Applicants 3/18/2010 amendments have been amended to clarify the integrated structure of first & second nozzles employed for liquid droplet deposition & plasma treatment respectively, with clear statements on the record with respect to intended scope. With respect to their integrated nozzle structure, applicants have argued that Kiguchi et al. (582) do not provide teachings of the claimed integrated structure used in processing & argued that the block diagrams 1-7 show inkjet system separated from treatment means, however the examiner notes that while the block diagrams show them as separate blocks, they also illustrate the blocks as moving in tandem, with it specifically noted that figure 1 illustrates inkjet print head (2) & treatment means (3) as employed together with dashed lines of a box surrounding these two means, which are both moved by what is indicated to be one "drive mechanism 4" (col. 6, lines 15-25). Hence, While there is no explicit teaching of integration of ink jet head & treatment means, Kiguchi et al. (582) is considered suggestive thereof, especially in view of **Speakman et al**. (abstract; figures, esp. 5, 7-8, 10-11, 13, 15, 16-22, 24; col. 3, lines 3-49 & col. 4, lines 11-20 & 31-39+; col. 5, lines 46-67, esp. 64-67; col. 6, lines 10-15+; col. 7, lines 59-65; col. 9, lines 36-53; col. 17, lines 56-60 & col. 18, lines 12-39; claims, esp.1, 19-20, 29, 37-38 & 67), who teach an integrated printhead electromagnetic radiation treatment structure, which teaching is generic to radiation treatments in general, thus inclusive of plasma, although Speakman et al.'s specific preferred electromagnetic radiation employ various light or microwave radiation techniques, however they also teach in-situ plasma pretreatment, as well as mentioning employing pulsed plasma electrode configurations for pretreatment adjacent to the

droplet landing zone. Therefore, considering Kiguchi et al., including as combined with Di Dio &/or Lewis et al., as discussed below, it would been obvious to one of ordinary skill in the art that given the suggestive disclosure of Kiguchi et al. with respect coupling of inkjet printers & per- or post-treatment radiation techniques, plus the teachings of Speakman et al. that explicitly integrate structures for inkjet print heads & radiation treatment means for analogous processing, to employ integrated plasma & inkjet nozzles as claimed, particularly considering that the combined references clearly show the capabilities of localized plasma treatments analogous to localized let radiation treatments of Speakman et al.

To reiterate, **Kiguchi et al.** (582) teach at various treatment systems employed with inkjet drop delivery to substrates (useful nozzle system described) of coating materials, inclusive of essentially any fluid of sufficiently low viscosity, hydrophilic or hydrophobic, exemplified by compositions containing electric conductive metal & solvent, metal salts, organic pigments in resins & $Al_2O_3$ or silica. While the substrates on which the processes may be performed are not particularly limited, specific mention is made of substrates used in semiconductor processes or integrated circuits, such as silicon substrates, or substrates on which plasma treatment has been performed resulting in crosslinking of macromolecules of the substrate, i.e. essentially disclosing polymeric substrates that are inclusive of insulating materials (e.g. col. 1, lines 7-23; & col. 11, lines 33-48, etc.). Kiguchi et al. described employing a drive mechanism 4 to move the **inkjet head & treatment apparatus in tandem** in either X- or Y-directions, as illustrated in figures 1-6, esp. 1-3, which reads on claimed horizontal movement, as well as being consistent with patterning on first selected portion & second selected portion, consecutively or repeatedly, including possible meanings of a one drop pattering joined with another one drop pattering. Kiguchi et al. have disclosures relating to treatments performed before, during and after droplet delivery, where the treatments delivered before are of particular interest with respect applicants' claims, as it is taught that the substrate can be surface modified to achieve affinity for the fluid before this fluid has been ejected onto the substrate (col. 10, lines 28-44, etc.). These pre-treatment techniques are inclusive of reverse

sputtering in Ar (i.e. generally a plasma etching effect, inclusive of roughening), corona ejection treatments & gas plasma treatments, with description of performing a plasma treatment discussing the treatment apparatus being configured such that is possible to eject a plasma generated by a gas discharge, which ejection teachings are considered to read on the equivalent to a nozzle configuration. Alternatively, it would've been obvious to one of ordinary skill in the art that in order to effect ejection of plasma or corona discharge, it would've been necessary to have a chamber or generation zone with an exit to eject them from, thus to employ such a structure in order to perform the teachings of Kiguchi et al. The reference specifically teaches use of plasma type processes (sputtering, corona or plasma treatment) for use in pretreatment of surfaces before application of ejected droplets, and particularly mentions that surface modifications employed may be used to create affinity for the liquid being applied in the desired path, remove affinity for the liquid to be applied on banks adjacent to the desired deposition path **&/or** to actually form banks around the pattern forming region in order to prevent fluid from flowing out of it (e.g. col. 3, lines 22-53, esp. 40-44, etc.). Kiguchi et al. further disclose that their disclosed treatment options may be used individually or a plurality of them may be used at the same time when pattern formation is completed as a result of the plurality of steps. Particularly see the abstract; figures; col. 1, lines 8-16 & 48-65; col. 2, lines 8-13; col. 3, lines 23 (esp. 40-45 for bank formation)-col. 4, line 14 & 40-42 & 57-64; col. 6, lines 15-45+; col. 7, lines 11-45; col. 8, lines 1-12; col. 9, lines 52-55; col. 10, lines 1-4; embodiment 3, esp. col. 10, lines 28-44 & 51-col. 11, lines 7, 33-41 & 53-59; plus further relevant disclosure on col. 12, lines 10-25; col. 13, lines 1-10 suggesting various polymers or resins as bank material; & col. 18, lines 17-52; plus claims.

It was previously further noted that while Kiguchi et al. discuss pattern formation, illustrating in figure 1, a pattern path moved in several different horizontal directions, they *do not explicitly* discuss deposition of multiple pattern portions when employing pretreatment using some form of plasma, however given the teachings of arbitrary patterning (Field of the Invention), of employing various taught

options together (col. 18), and of teachings concerning in drive mechanism and movement (figure 1 & col. 7), these teachings may be considered to encompass applicants' claim of a pattern of on a first portion made by the horizontal movement, then sequential plasma & drop deposition treatments, plus a pattern on the second portion made by the horizontal movement then sequential plasma & drop deposition treatments, as each change in direction may be considered a horizontal movement onto another portion to form another pattern, or even each incremental plasma treatment followed by drop deposition may be considered a different portion & different pattern, as would be consistent with the "a drop..." nomenclature in the present claims. Alternatively, it would've been obvious to employ such patterning designs with particular taught plasma, corona or sputtering pretreatments before inkjet droplet application, or to employ the process for multiple successive pattern depositions on the substrate as a whole, due to the overall teachings in the patent, which would suggest patterning employing multiple directions, or as application of multiple coatings by the liked techniques, especially in the suggested uses for semiconductor industry, are typical & conventional practices, dependent on the specific product intended to be produced, such as multilayers for wiring configurations that are old and well-known as typical in the integrated circuit & semiconductor industry.

Also note that while the teaching that the various options may be used in combination can be considered to include the teachings of film forming on the surface insulating film, i.e. banks for containing the pattern depositions, as well as one of the various plasma pretreatments for the deposit, before the ink drop deposition occurs, Kiguchi et al. does not explicitly set forth this specific combination of steps. However, given the overall teachings & the teachings that combination of pretreatment steps can be employed, it would have alternately have been obvious to one of ordinary skill in the art to combine such teachings due to the suggestion of use of multiple options taught therein, as well as the reasonable expectation that improving the affinity due to plasma treatment, as well as an initial deposition of insulating bank material to hold the flow of droplet material (possibly re-treated to eliminate affinity or

otherwise treated to insure its effectiveness) would have been expected to work in combination together provide a greater overall improvement together in resolution of the deposit due to the different means each technique employs to improve the resolution , which would have reasonably been expected to provide cumulative desirable effects.

Furthermore, the claims presently have clarified relationships forming thin film depositions on the claimed insulating surfaces to have either affinity or appellant relationships with the subsequently applied liquid composition, where aside from their liquid affinity or lack thereof, are merely a generic coatings that has been applied on a generic insulator (now encompassing any type of electrical insulator) before the plasma treatment/liquid drop treatment is performed. Since substrates intended be treated by the process of Kiguchi et al. are not relegated to a single material or a single enduse, but the process is generally taught as useful to create patterns as needed (summary, e.g. col. 1, lines 33-44+; col. 2, lines 3-32, etc.), with treatments intended to be tailored dependent on affinities of substrate surface & deposition materials, where suggested enduses of the taught Related Art include used for patterning in the semiconductor industry, integrated circuit patterning & like, would reasonably suggest one of ordinary skill the art that the substrates been employed for the taught arbitrary patterning as needed by the arbitrary enduse would reasonably have encompassed substrates of composite materials, where one of ordinary skill the art would reasonably have expected the substrates to include insulating substrates like polymer or glass or the like, with any number of surface layers deposited thereon before the particular patterning technique was employed, dependent on whatever particular devices for which one is using the taught patterning techniques, hence one would consequently choose treatment for affinity or the opposite dependent on previous layer deposits of the preceding device formation sequence. The teachings of Kiguchi et al. provide a sufficiency of teachings that would reasonably enable one of ordinary skill and competence in the patterning art to choose their pretreatments in accordance with the particular properties

of the last layer (or layers) exposed on the surface to be patterned & the related affinity properties of particular deposition fluid required for the next required pattern.

**Kiguchi et al**. does not discuss pressures employed in any of their processing techniques, however they also do not disclose the necessity or even mention the use of a chamber in which the overall process is performed, let alone one that requires a vacuum to be created, hence it would've been reasonable for one of ordinary skill in the art to assume that in general the processes as taught may be performed at atmospheric pressure, thus the tandem surface (plasma or corona) treatment, then ink drop deposition , which has taught would have to be performed at the same pressure would reasonably have been performed at atmospheric pressure, especially considering that unless stated otherwise, corona discharge is usually performed at atmospheric pressure, or unless some particular characteristic of a particular treatment/deposition sequence required more stringent considerations (e.g. for contamination control &/or control of a particular technique, etc.). Also note that applicants' claimed range of 13 Pa-$1.31 \times 10^5$ Pa ≈1-980 Torr is inclusive of atmospheric pressure.

While **Kiguchi et al**. teach use of plasma for surface modification in general, or for increasing or decreasing droplet affinity, & as generic means of changing the surface affinity, with mentioned that pre-treatment processes before inkjet deposition may be employed to form banks to hold following ink jet deposition, Kiguchi et al. do not specifically suggest that a means of employing the plasma to increase the affinity or plasma treating when forming banks that includes etching deposited bank material in order to form a groove to thus create the banks (i.e. just forming banks for preventing fluid from flowing out and around pattern forming areas on the substrate surface), however **Di Dio** (abstract; [0045-55], esp. [0053]; claims, esp. 1, 6, 10 & 16) teach a process of depositing hydrophobic material, then depositing a "deep UV" photoresist material thereon, patterning the photoresist material to expose the hydrophobic layer in the pattern, followed by etching of the exposed hydrophobic material, where that **etching may include plasma etching** (described as a traditional technique) to selectively remove hydrophobic material &

expose underlying material. It would've been obvious to one of ordinary skill in the art to employ the patterning technique of Di Dio in forming the banks Kiguchi et al., as it provides an alternate bank formation techniques consistent with the processing techniques as disclosed in the primary reference, as well as showing the expected effectiveness of employing plasma for etching bank materials, as well as specifically noting that such etching procedures are traditional means of effecting such analogous patterning, which in combination with Kiguchi et al.'s teachings that employ plasma for treatment of the material of the banks, with suggested language relating to bank formation in connection with pretreatments, would clearly suggest one of ordinary skill in the art that formation of the banks, i.e. patterning of the initially deposited material in order to form the banks, would reasonably have been expected to have been effectively performed by using pretreatment plasmas as suggested in Kiguchi et al. in the actual bank formation as taught by Di Dio.

While this combination does not teach the plasma for the etching comes from a nozzle, as discussed above the teachings of Kiguchi et al. are considered inclusive of application of the taught plasma or corona techniques via a nozzle, but optionally, **Lewis et al**. (979) may be further considered, as they clearly teach ablation from a plasma, where patterning is inclusive of their technique, hence the suggested plasma etching of the combination would have been expected to be effective when using a nozzle & would have been further obvious to accomplish with a plasma from a nozzle, for reasons as discussed above & as it has been demonstrated to provide patterning as desired by the combination.

As discussed in previous actions, **Lewis et al**. (979) employ plasma jet discharges in order to **ablate or otherwise transformed surface layers to change the affinity to subsequently applied coating**, such as printing ink or aqueous solutions, where such plasma techniques discussed in Lewis et al., include the use of working gases such as N, Ar or another inert gas or oxidizing gases, such as oxygen; can be employed for effecting positive or negative affinity of substrates, including for wet coating techniques. In Lewis et al. (979 see the abstract; figures 3 & 4; col. 3, lines 46-55; col. 4,

especially lines 1-12, & 40-61; col. 5, lines 25-41; col. 6, lines 55-col. 7, line 29; col. 9, lines 51-61; col. 10, lines 25-39; col. 14, lines 43- 54+; and col. 15, lines 33-68+). Therefore, it would have been reasonable to one of ordinary skill in the art that as Kiguchi et al. is providing teachings concerning plasmas that selectively affect the surface affinity to subsequent coating using plasmas suggesting output from nozzles, as well as bank formation, & Di Dio provide teachings and motivation to form analogous banks via plasma etching procedures applied to insulative films to remove material & thus formed the equivalent of banks in the form of grooves, but do not discuss particular plasma details to achieve the etching, that the process of Lewis et al. provide plasma techniques which would have been expected to be equivalently effective in the process of Kiguchi et al., as Lewis et al. demonstrates their techniques effectiveness for multiple different coatings inclusive of polymeric materials, metal materials, silicones, inks, etc., thus **showing** the expected general **effectiveness of such affinity & etching treatments via plasma from a nozzle**.

The examiner has previously noted that any localized pattern application via a nozzle will inherently provide a variation in plasma gas supplied in the plasma between the area(s) of localized application, and those areas surrounding it which are not being treated at that instant, which is relevant to the plasma application in any of the references of the above combination.

4. **Seki et al.** (EP 0989778 A1), as discussed in previous actions (section 5-6 of the action mailed 1/25/2008 & section 6 of the action mailed 11/7/2006) remains cumulative to the above rejections, as presenting specific plasma pre-treatments effective on specific materials before liquid applications that are relevant to the more general teachings of Kiguchi et al. (582).

5. **Claims 23-28 & 31-32** are rejected under 35 U.S.C. **103(a)** as being unpatentable over **Kiguchi et al.** (582), in view of **Di Dio** (2004/0152329 A1) & **Speakman et al.** (6,849,308 B1), <u>optionally</u> considering **Lewis et al.** (5,272,979) ), as applied to claims 1-6, 16-17 & 29-30 above, and further in view of **Yamazaki et al.** (7,189,654 B2).

Independent claims 23 & 26 require additional limitations in a more detailed process, which includes or encompasses the more general processes of independent claims 1 & 2, except not necessitating the initial film deposition on insulating surface (which lacking any specific materials for succeeding steps has very little meaning). Specifically, these claims require that the patterns formed the conduct of patterns, however this is consistent with Kiguchi et al.'s teaching of employing metal salts or electric conductive materials in solution, however Kiguchi et al. does not specifically discuss that these materials that will create electrically conductive deposits are employed for forming wiring patterns via subsequent forming thereover of a resist that is a mask pattern, followed by some sort of an etching step to form a conductive pattern, nor that the entire sequence of steps is repeated at least once. It is further noted that claim 26 is analogous to claim 2 in that it requires the plasma treatments to produce grooves. New claims 31 & 32 have been added to specify that the etching of a conductive material is via localize plasma discharge from a plurality of plasma discharge ports, however it is noted that such plasma patterning is already consistent with Kiguchi et al. in view of Di Dio & optionally Lewis et al.

However, **Yamazaki et al**. (abstract; figures 3 & 4; claims, esp. 1-2, 5, 7, 10, 12, 15, 17, 19, 21 & 23) teach processes of further treating a deposited metal layer on a dielectric surface by selectively depositing in **masking material** thereon & **plasma etching** via a plasma device employing a **nozzle** in order to **selectively etch the periphery** of the conductive layer in order to form or prefect a wiring pattern, which is consistent with the new requirements for both patterning & localized plasma discharge, noting figure 4(B), described col. 11, lines 33-46 illustrates the required plural nozzles. Therefore, it would've been obvious to one of ordinary skill in the art that given Kiguchi et al., or Kiguchi et al., in view of Di Dio et al. & either optionally considering Lewis et al., as discussed above, which provides options of depositing conductive layers as claimed, to further treat such layers as taught by Yamazaki et al., in order to perfect the conductive pattern layer for use as a wiring layer, as electrically conductive metal patterns are conventionally used as wiring layers, plus as the deposition & plasma treatments taught

by Yamazaki are consistent with further treatment & deposition options as discussed by the above combination, especially considering the teachings therein that one may combine multiple options in order to produce the overall process, as well as considering that the taught related art relevant to the patterning processes of the primary reference suggested circuit patterns

6. **Claims 23-28 & 31-32** are rejected on the ground of nonstatutory **obviousness-type double patenting** as being unpatentable over claims 1-24 or claims 1-16 of U.S. Patent No. **7,189,654 B2** (Yamazaki et al.) or **7625493 B2** (Yamazaki), in view of **Kiguchi et al.** (582), further in view of **Di Dio** (2004/0152329 A1) & **Speakman et al**. (6,849,308 B1), optionally considering **Lewis et al**. (5,272,979), as discussed above.

**Claims 1-6, 16-17 & 23-32** are rejected on the ground of nonstatutory **obviousness-type double patenting** as being unpatentable over claims 1-16 of U.S. Patent No. **7,625,493 B2** (Yamazaki), in view of **Kiguchi et al.** (582), further in view of **Di Dio** (2004/0152329 A1) & **Speakman et al**. (6,849,308 B1), optionally considering **Lewis et al**. (5,272,979) ), as discussed above.

The claims of copending patented cases by overlapping inventors where with respect to copending **(654) patent** the claims differ by depositing the initial conductive layer via a different techniques, i.e. CVD, evaporation or sputtering, however employ essentially the same techniques for perfecting the conductive deposition for use as a wiring configuration via use of a selectively deposited resist layer & etching, therefore for reasons as discussed above it would've been obvious to one of ordinary skill in the art to use alternative techniques for depositing an electrically conductive pattern, as the technique of the initial deposition of the conductive pattern does not appear to be critical given the ability to depositing via multiple different techniques.

With respect to the copending **(493) patent**, the claims differ by not requiring a plasma pretreatment before deposition of conductive liquid droplets deposited via nozzles, thus not requiring the integrated dropped nozzle/plasma nozzle structure, nor the specific plasma treatment with respect to

formation of grooves, however as seen above with respect to Kiguchi et al., both the integrated nozzle structure & the act and need for pretreatment via plasma is known in the art, hence dependent on particular substrate confirmation & liquid affinities, it would've been obvious to one of ordinary skill in the art to employ the teachings of Kiguchi et al., in view of Di Dio & Speakman et al., to determine appropriate & desirable plasma pretreatment techniques dependent on particular materials & configuration, employing integrated plasma & drop delivery head structure, as discussed above.

7. Applicant's arguments filed 3/18/2010 have been fully considered but they are not persuasive.

New art noted to be of interest, but which is not prior art includes **Florence et al.** (7,387,352 B2)

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. **Any inquiry** concerning this communication or earlier communications from the examiner should be directed to **Marianne L. Padgett** whose telephone number is **(571) 272-1425**. The examiner can normally be reached on M-F from about 9:00 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Marianne L. Padgett/
Primary Examiner, Art Unit 1792

MLP/dictation software

6/19-20/2010